

The probable error of one determination from all the values above is  $\pm 0''.200$ , but it will be noticed that there is a large systematic difference between the values found for circle east and circle west, which considerably increases the probable error. Thus the differences for the five stars in L. 7 in the sense E.—W. are

1	$+0''.40$	4	$+0''.45$
2	$-0''.34$	5	$-0''.50$
3	$-0''.47$		

If a correction of  $\pm 0''.20$  is applied to the values of the latitude in this group according as the circle is west or east, the probable error of a single determination is reduced to  $\pm 0''.115$ , which is smaller than the value found by a skilful observer with a visual telescope, viz.  $\pm 0''.125$ . If, now, the differences from the daily mean are found for each of the five stars, and the mean difference for each star is applied as a correction to every determination of the latitude by that star, the following values are found :—

L. 7.	1	2	3	4	5	Mean.
Feb. 2	51 <sup>''</sup> 27	51 <sup>''</sup> 02	50 <sup>''</sup> 98	51 <sup>''</sup> 00	50 <sup>''</sup> 81	51 <sup>''</sup> 02
3	51 <sup>''</sup> 18	51 <sup>''</sup> 13	51 <sup>''</sup> 44	51 <sup>''</sup> 16	51 <sup>''</sup> 13	51 <sup>''</sup> 21
5	51 <sup>''</sup> 04	51 <sup>''</sup> 23	51 <sup>''</sup> 43	51 <sup>''</sup> 31	50 <sup>''</sup> 92	51 <sup>''</sup> 19
11	51 <sup>''</sup> 08	51 <sup>''</sup> 21	50 <sup>''</sup> 88	51 <sup>''</sup> 09	51 <sup>''</sup> 14	51 <sup>''</sup> 17
13	51 <sup>''</sup> 07	51 <sup>''</sup> 04	50 <sup>''</sup> 90	51 <sup>''</sup> 08	51 <sup>''</sup> 25	51 <sup>''</sup> 07

An explanation of the difference E.—W. has yet to be found ; but its existence seems to be so conclusively shown that the above may be taken as an example of the result to be expected from the instrument.

*Note accompanying Photographs of the Spectrum of Nova Persei.  
By Frank McClean, LL.D., F.R.S.*

The observations made by me of the spectrum of *Nova Persei* at present extend from February 25 to March 6. On the 23rd and 24th the star was not visible. On the 25th some glimpses of the spectrum were obtained through passing gaps in the clouds. The star was then considerably brighter than a *Persei*. The general character of its spectrum did not subsequently change, although apparently the red hydrogen line became brighter.

From February 27 till March 3 photographs of the spectrum were obtained by me on each night with the 12-inch object glass prism, and again on March 5 and 6.

The two enlarged spectra exhibited were taken on February 27 and March 3. In extent, they reach from ( $H\zeta$ ) to the position of the (*b*) line of magnesium. Comparison spectra of *Sirius* and  $\beta$  *Crucis* are mounted on the same plate. The hydrogen series are at once identified in the spectrum of *Nova*. They appear both as ill-defined absorption lines and as broad bright bands, displaced towards the red, but joining up to the dark lines.

The helium series of lines do not appear with any certainty either as bright or as dark lines or bands.

The calcium (K) line is present, and there are other absorption bands which appear to be partly due to calcium and titanium. There are also other indistinct bright bands which have not been identified.

On the second photograph, taken on March 3, when the star had diminished somewhat in brightness, the spectrum remains the same, except that some of the dark bands have become more prominent.

The comparison with the spectrum of *Sirius* shows a certain correspondence between the grouping of the absorption lines in that spectrum and the dark bands in the spectrum of *Nova*. The correspondence is far from clear, but it is sufficient to suggest the idea that *Nova* is a Sirian star with additional bright bands due in the main to hydrogen. The displacement of the bright hydrogen bands to the less refrangible side of the absorption lines and their great width is attributed to differences of velocity in the line of sight between two or more sources of light. It should be observed, however, that in the case of *Nova Aurigæ* the bright bands were displaced in the same direction. No definite observations on this point appear to have been made with regard to *Nova Cygni* or *Nova Coronæ*. If the displacement is to be accounted for by differences of velocity, it should be as often one way as the other.

I hope to obtain some further photographs of the spectrum of *Nova* before it disappears, and will then place the full series before the Society.

1901 March 8.

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*Notes on the Spectrum of Nova Persei observed at the Stonyhurst College Observatory.*

By the Rev. Walter Sidgreaves, S.J.

On the night of February 28 the cloud-cover, which had been persistent since the 20th, suddenly thinned at 10.15 P.M. to a hazy clearness. The *Nova* appeared rather brighter than *a Persei*. The spectrum was observed with the direct vision spectroscope on the 15-inch O.G. equatorial, and two photographs were obtained, one with this spectroscope, the other with a 4-inch